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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,184

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Tomoyuki Yagi

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03/03/2009

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EXAMINER

CHAO, ELMER M

ART UNIT

PAPER NUMBER

3737

MAIL DATE

DELIVERY MODE

03/03/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/511,184

Applicant(s)

YAGI ET AL.

Examiner

ELMER CHAO

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-850)
- Paper No(s)/Mail Date 12/12/2008
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Acknowledgement is made of the amendment filed 12/12/2008.

Response to Arguments

3. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-8, 10, and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nix et al. (U.S. 7,037,269 B2) in view of Brommersma (U.S. 5,351,691), and further in view of Kimura et al. (JP 11305143 A).

Regarding **claims 1-5 and 11**, Nix et al. teach an ultrasound probe comprising: a transducer unit including a plurality of transducers for transmitting and receiving an ultrasound respectively located in correspondence with adjacent positions of transmission and reception (Fig. 2, Item 3); and a flexible circuit board of at least one layer located in correspondence with said positions of transmission and reception (Fig. 2, Item 12), in which signal lines for supplying a transmission signal and for extracting a reception signal to/ from said positions are installed (Fig. 2), wherein the flexible circuit

board has slits (the flexible circuit board must have areas of non-conduction in order to separate the different signal lines) dividing signal lines into sections at each of said positions at a predetermined angle, and each section of the flexible circuit board divided by the slits is spirally wound (col. 4, lines 32-34; Fig. 6a), wherein the flexible circuit board is insulated by a first shield or protection material (col. 4, lines 38-45).

Nix et al. teach the limitations as discussed above but fail to explicitly teach the flexible circuit having two sections joined at a predetermined angle. However, in the same field of endeavor, Brommersma teaches a flexible PCB with two sections joined at a predetermined angle (see at least figs. 5 & 6, items 60 and 64). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the angled PCB configuration as taught by Brommersma as a matter of design choice. Such a configuration is considered a well-known solution to the common problem of routing flexible PCBs.

Nix et al. and Brommersma teach the limitations as discussed above but fail to explicitly teach the flexible circuit board having a plurality of sections which are separately wound. However, in the same field of endeavor, Kimura et al. teach a flexible board being divided into sections in which each of the sections are separately spirally wound (see Fig. 4; Para [0020] – Para [0027]). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Nix et al. to flexible circuit board having a plurality of section which are separately wound in order to improve the activity of the probe (for motivation see Para [0022]).

Regarding **claims 6 and 8**, the protection material or second shield is in the form of a flexible tube (Fig. 2, the actual portion of the catheter near Item 15 is a flexible tube).

Regarding **claim 7**, the protection material consists of a stiff section (Fig. 2, Item 2) and a flexible section (col. 4, lines 38-45; Fig. 2, Item 12).

Regarding **claim 10**, the probe would be capable of being inserted inside a body cavity.

6. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Nix et al. in view of Brommersma, further in view of Kimura et al., and further in view of Holdaway et al. (U.S. 2001/0047134 A1). Nix et al., Brommersma, and Kimura et al. teach the limitations as discussed above but fail to explicitly teach separate layers for ground and signal. However, in the same field of endeavor, Holdaway et al. teach separate layers for ground and signal (Para [0059]). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Nix et al. in view of Kimura et al. to include separate layers for ground and signal as it would shield the signal from external electric and magnetic fields (for motivation see Para [0059], last sentence).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELMER CHAO whose telephone number is (571)272-0674. The examiner can normally be reached on 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/
Supervisory Patent Examiner, Art
Unit 3737

/E. C./
Examiner, Art Unit 3737
2/28/2009